Intrapartum Fetal Surveillance Policy

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Document Type	Policy
Risk of non-compliance	may result in significant harm to the patient/DHB
Function	Clinical Practice, Patient Care
User Group(s)	Auckland DHB only
• Organisation(s)	Auckland District Health Board
• Directorate(s)	Women's Health
• Department(s)	Maternity
• Used for which patients?	All maternity patients in suspected or confirmed established labour
• Used by which staff?	Clinicians in maternity including access holder lead maternity carers (LMCs)
• Excluded	
Keywords	CTG fetal heart monitoring
Author	Midwifery Educator
Authorisation	
• Owner	Service Clinical Director - Secondary Maternity
• Delegate / Issuer	Charge Midwives - Delivery Unit (DU) and Women's Assessment Unit (WAU)
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1. Purpose of policy

To ensure that the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Intrapartum Fetal Surveillance Clinical Guideline is followed within Auckland DHB by all practitioners employed or with an access agreement. The aim is to reduce adverse perinatal outcomes related to inappropriate interpretation and or management of intrapartum Cardiotocography (CTG) and use of intermittent auscultation.

2. Recognition of risk factors

Intrapartum fetal surveillance by intermittent auscultation or by continuous electronic fetal monitoring known as CTG should be discussed with and recommended to all women. In the presence of antenatal or intrapartum risk factors (as described in the RANZCOG guideline), continuous CTG in labour is recommended. In the absence of risk factors, intermittent auscultation using a Doppler should be used. A full list of risk factors can be found on page 8 of the RANZCOG clinical guideline (see Supporting evidence section).

The RANZCOG guideline outlines the practice of intermittent auscultation:

- Each auscultation episode should commence toward the end of a contraction and be continued for at least 30-60 seconds after the contraction has finished.
- Auscultation in labour should be undertaken and documented;
  - Every 15-30 minutes in the active phase of the first stage of labour
  - After each contraction or at least every five minutes in the active second stage of labour.

The RANZCOG guideline neither supports nor refutes the use of an 'admission' CTG (for women without risk factors). Auckland DHB does not currently recommend admission CTGs for low risk pregnancies.

When continuous monitoring is indicated and there is difficulty in obtaining a satisfactory recording using an abdominal transducer, use of a fetal scalp electrode (FSE) is recommended. Maternal consent should be obtained. Contraindications to siting an FSE are synonymous with those of fetal scalp sampling (see Further Fetal Evaluation section below).

If membranes are intact there would have to be strong rationale to rupture them in order to site an FSE, in the absence of other clinical indications to do so.

3. Documentation of continuous CTG

The following should be recorded on the CTG paper at its commencement:

- Patient label
- Date and time
- Paper speed (1cm/minute)
- Gestation and indication for continuous monitoring

- Maternal heart rate (to differentiate between maternal and fetal heart rates).

Intrapartum events with the potential to affect the fetal heart rate (e.g. vaginal examination, increase of oxytocin infusion, epidural insertion, fetal blood sampling, should be noted contemporaneously.

A CTG sticker should be completed at least **every 60 minutes** and placed in the woman's clinical notes. The CTG should be reviewed by another midwife or doctor every two hours and the CTG sticker should be co-signed and placed in the woman's clinical notes ('Fresh Eyes'). Doctor's reviewing the woman and CTG should complete a CTG sticker as part of their documentation.

4. Normal CTG

A normal CTG includes the following features as described in the RANZCOG guideline:

- A baseline fetal heart rate (FHR) of 110-160 beats per minute (bpm)
- Baseline FHR variability of 6-25bpm
- The presence of accelerations – transient increases in FHR of 15bpm above the baseline and lasting 15 seconds at the baseline. The significance of no accelerations on an otherwise normal CTG is unclear.
- No decelerations – see RANZCOG clinical guideline for descriptions of early, variable, complicated variable, prolonged, late decelerations and bradycardia.

All other CTGs by this definition are abnormal and require further evaluation taking into account the full clinical picture.

5. Management of abnormal CTG

- The attending midwife should continue CTG monitoring and remain with the woman.
- Escalate to the Clinical Charge Midwife (CCM) for CTG review.
- Identify any reversible causes (e.g. hypotension, hyperstimulation) and initiate intrauterine resuscitation (SPLIT acronym):

    - **S**top the oxytocin
    - **P**osition the woman on her left side
    - **L**ow blood pressure correction
    - **I**ntravenous fluids - rapid infusion
    - **T**ocolysis – first line treatment of acute hyperstimulation is with terbutaline (Bricanyl) 250mcg subcutaneously as a single dose (contraindications: history of heart disease; significant risk factors for myocardial ischaemica; pulmonary hypertension; eclampsia or severe pre-eclampsia), otherwise glyceryl trinitrate (GTN) spray (refer Oxytocin for Induction and Augmentation of Labour guideline for further detail, see Associated documents).

- Abnormal CTG alone is not an indication for artificial rupture of membranes (ARM).

- If FHR remains abnormal after undertaking the above measures, then:

    - Escalate further to the registrar or Senior Medical Officer (SMO) for review
    - Undertake further fetal evaluation (scalp stimulation and or fetal blood sampling)
    - If FHR remains abnormal, and further evaluation is not possible, delivery should be expedited.

Objective senior assessment and evidence of fetal wellbeing (SMO review of the CTG, fetal blood sampling) is required to reverse any prior decision for an urgent delivery.

6. Further fetal evaluation

If fetal scalp stimulation leads to acceleration in the fetal heart rate, this can be regarded as a reassuring feature. If there is no FHR acceleration or if there remains a suspicion for fetal hypoxia or acidosis, then fetal scalp lactate should be performed.

If fetal scalp lactate testing is undertaken, the woman should be in a position that avoids inferior vena cava compression (e.g. left lateral position).

The below are contraindications to fetal scalp lactate as per the RANZCOG Clinical Guideline (refer recommendation 13):

- Evidence of serious, sustained fetal compromise
- Fetal bleeding disorders (e.g. suspected fetal thrombocytopenia, haemophilia)
- Non-vertex presentation
- Maternal infection* (e.g. human immunodeficiency virus (HIV), hepatitis B, hepatitis C, herpes simplex virus and suspected intrauterine sepsis)
- Less than 34 weeks (relative contraindication, based on increased risk of harm with delay).
  *Group B Streptococcus carrier status does not preclude fetal blood sampling (FBS).

Record fetal scalp lactate results contemporaneously on the CTG trace as well as in the clinical notes.

7. Management of fetal scalp lactate results

Lactate results	CTG	Action
Less than or equal to 4.0	CTG improves	No need to repeat
Less than or equal to 4.0	CTG remains abnormal	Repeat in one to two hours
4.1 – 4.7		Repeat in 30 minutes
4.8 – 5.7		Expedite birth
Over 5.7		Category 1 Caesarean Section

8. Umbilical cord lactates

Umbilical cord lactates are recommended when any of the following are present:

- Any labour where there has been concerns about fetal wellbeing
- Fetal scalp lactate performed during labour
- Assisted vaginal birth (ventouse and forceps)
- Emergency caesarean section
- Apgar < 4 at one minute
- Apgar < 7 at five minutes
- Small for gestational age babies
- Preterm babies
- Fetal abnormality.

The process of taking cord lactates should not interfere with third stage management or delayed cord clamping. It is acceptable to double clamp the cord to take samples between 60-90 seconds after birth. Two samples (artery and vein) should be taken using the heparinised syringes. The arterial sample best reflects the fetal condition; taking two samples aids differentiation between the two and the venous sample provides additional information of fetal oxygenation. It is preferable to take the arterial sample first using the 22 gauge needle and then the vein using the 20 gauge needle. The recommended fill volume is 1.0mL but a **minimum volume of 0.3mL** (in barrel of syringe) can be analysed. Samples should be processed within 10 minutes using the lactate machine.

9. Management of umbilical cord lactate results

Lactate results	Action
Less than 6.0	Document results on neonatal blue card and maternal / neonatal notes.
6.0 or above	Document as above and send paired umbilical cord gases. Complete Newborn Observation Chart (NOC) / Newborn Early Warning Score (NEWS) chart; a cord lactate result greater than 6.0 is a risk factor for 'significant intrapartum fetal compromise'.

Umbilical cord gases can be analysed within one hour of birth if clamped immediately after delivery. Both umbilical cord arterial and venous gases should be analysed.

When sending cord gases, ensure to document the delivery unit CCM phone number on the laboratory request form.

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10. Management of umbilical cord gas results

The midwife providing immediate postnatal care is responsible for following up on the gas results. The laboratory should call the delivery unit CCM with abnormal results.

Umbilical cord gas result	Action
pH less than 7.0 **OR** base excess less than or equal to -12 mmol/L	Call paediatric registrar 2nd on call for review.
pH 7.0 – 7.15 **OR** base excess -11 to -7 mmol/L **OR** umbilical cord gas result not available and cord lactate greater than or equal to 6.0 mmol/L	Monitor baby for signs of neonatal encephalopathy (hypotonia, poor feeding, lethargy, weak or absent suck/gag or moro reflex, seizures). Call paediatrician if any concerns.
pH above 7.15 AND base excess above -7 mmol/L	Document results.

11. Fetal surveillance education

At Auckland DHB all midwifery and obstetric (SMO) staff must attend regular mandatory fetal surveillance education which consists of a three year rolling programme:

- Year 1 - RANZCOG Face to face full day or online programme if unable to book onto face to face
- Year 2 - RANZCOG Online programme or face to face if not done previously
- Year 3 - Auckland DHB in hours education, e.g. workshop, or equivalent hours of weekly CTG meetings.

Notes:

- Exemptions to the above requirements should be considered at Directorate level.
- Fetal surveillance education provided by Auckland DHB must include CTG interpretation and use of fetal lactate assessment.
- All Lead Maternity Carer (LMC) Access Holders should be invited to Auckland DHB - sponsored fetal surveillance education activities.
- All LMC access holders should provide information to Auckland DHB on request of the Directors, of any fetal surveillance education that they have completed.
- Currently, fetal surveillance education is not a mandatory requirement for LMC Access Holders however, an adverse event review recommendation states ‘Update fetal surveillance policy to mandate regular fetal surveillance education including CTG interpretation and use of fetal lactate assessment for all staff and access holders’.

12. Supporting evidence

- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019). Intrapartum Fetal Surveillance Clinical Guideline (4th ed.). Found at: https://ranzcog.edu.au
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019). Management of Hepatitis B in Pregnancy – College Statement. Found at: https://ranzcog.edu.au

13. Associated documents

- Access Holders in Women's Health
- Intrapartum Care – Physiological Labour and Birth
- Oxytocin for Induction and Augmentation of Labour
- Caesarean Section (CS) - Pre, Peri & Post-Op Care
- Water for Labour and Birth

14. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Auckland DHB guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

15. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed ***before*** the scheduled date, they should contact the owner or Document Control without delay.

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